Trend Study 16B-16-99

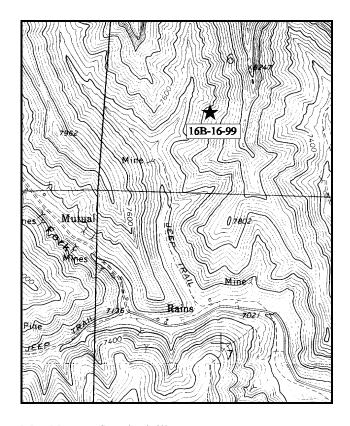
Study site name: <u>Hardscrabble</u>. Range type: <u>Big Sagebrush - Grass</u>.

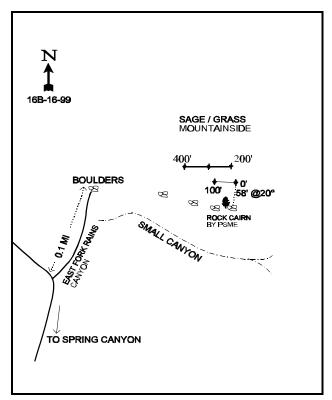
Compass bearing: frequency baseline 270°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34 & 71 ft), line 3 (59ft).

LOCATION DESCRIPTION

From US 6 in Helper, turn west onto North Main St. at the Texaco station. Go straight until you come to Uintah St., then turn left. Continue on to Canyon St., then turn right. Go 1.35 miles to an old R.R. trestle. Continue 2.6 miles to a fork. Stay left on the oiled road and proceed 2.5 miles. Before the concrete bridge in the ghost town of Rains, turn right onto a dirt road by a UP&L substation. Go up Rains Canyon 1 mile to the East Fork. Go up the East Fork of Rains Canyon 0.1 miles to the end of the road. The study is located about halfway up the ridge to the east. Hike up the steep ridge to a rock cairn by a lone Douglas Fir tree. The frequency baseline 0' stake is 58 feet north of the cairn. The 2' tall fencepost has browse tag #7111 attached.





Map Name: <u>Standardville</u>

Township 13S, Range 9E, Section 6

Diagrammatic Sketch

UTM 4396522.094 N, 503526.206 E

DISCUSSION

Trend Study No. 16B-16 (30-2)

The grassy ridges and steep side hills in the Hardscrabble area are important winter and spring range for elk. There are scattered blocks of private land in this area administered by the BLM. It is cattle spring-fall range, but livestock use is insignificant on the steep upper slopes. The range type is sagebrush/grass, with Salina wildrye (*Elymus salina*) being the dominant species. The sidehills in this area are all very steep. The study site has a slope of approximately 50%. The north-facing slopes in the area support mountain brush and conifers, while the south slopes are dominated by grasses. Aspect on the study area is to the west with an elevation of 7,600 feet. Pellet group transect data from 1999 indicate a moderate level of use by elk with an estimated 41 elk days use/acre (101 edu/ha). Deer use was light with an estimated 2 deer days use/acre (5 ddu/ha).

Although very rocky, the soil appears to be moderately deep with an estimated effective rooting depth of over 19 inches. The soil textural class is clay loam, with a slightly alkaline pH (7.5). Due to the uniform coverage by bunch grasses, and the prevalence of boulders, cobble and gravel as erosion pavement on the soil surface, the soil is fairly well protected against erosion. On such a steep slope, there will always be some soil movement but it does not appear excessive on this area. Some pedestaling has occurred on the uphill side of the bunch grasses. Phosphorus is low at 3.9 ppm, where 10 ppm has been shown to be necessary for normal plant growth and development. Bare ground makes up only 11% ground cover in 1999, a decrease from 15% in 1994. Litter cover declined from 40% to 21% in 1994 due to drought conditions, but has since increased to nearly 26% in 1999. The increase in litter and decrease in bare ground points to improving soil conditions.

Browse is rather limited on the slope, but is not key as this site does not sample a critical winter browse range. Black sagebrush is the most common species with an estimated density of 5,932 plants/acre in 1988, 5,360 in 1994, and 8,540 plants/acre in 1999. The baseline was lengthened and realigned in 1999 which accounts for most of the large increase in density for black sagebrush over previous readings. Black sagebrush naturally has a somewhat hedged appearance, but half of these shrubs were classified as heavily hedged in 1988. Use in 1994 and 1999 was light to moderate. Percent decadency was high in 1988 and 1994 at 58% and 46% respectively, but has declined to 28% in 1999. Currently, 31% of the decadent plants are classified as dying. However, recruitment is high at 20% and the young age class is sufficient to replace those individuals that are classified as dying. Other species on or near the site include mountain big sagebrush, Greene's rabbitbrush, a shrubby eriogonum, snowberry, and curlleaf mountain mahogany. This is a marginal site for mountain big sagebrush, and none were sampled in 1999 with the realignment of the baseline. Snowberry has also declined and was not found in 1994 or 1999. The curlleaf mahogany in the vicinity is highlined.

Perennial grasses dominate the site with an estimated cover of over 16% in 1994, and nearly 19% in 1999. Salina wildrye, the most abundant grass, is large and vigorous but produces only poor to fair forage. Bluebunch wheatgrass and muttongrass are also very common. Salina wildrye and bluebunch wheatgrass together provide 59% of the total vegetative cover at the site. Forbs are uncommon and relatively unimportant as a forage source on this site. A large *Astragalus* is the most common forb, being sampled in 32% of the quadrats.

1994 TREND ASSESSMENT

Ground cover characteristics have changed due to the drought conditions which have existed over the past few years. Litter cover has declined by nearly 50%, while bare ground has increased by over 50%. However, due to the abundance of herbaceous vegetation, erosion does not appear to be a serious problem. Trend for soil is down slightly due to the reduction of protective ground cover. Trend for browse is stable. Black sagebrush, the key browse species on the site, has a stable population with reduced heavy use, decrease in decadency, and good vigor. Drought conditions have caused a decline in mountain big sagebrush and snowberry, but this

is a marginal site for these shrubs. The site is dominated by grasses. Both bluebunch wheatgrass and Salina wildrye increased significantly in sum of nested frequency while mutton grass declined significantly. Overall, sum of nested frequency for grasses declined slightly. Forbs were never very abundant on the site. Combined, they currently make up less then 1% cover on the site and sum of nested frequency has declined 30%. Trend for herbaceous understory is down slightly.

TREND ASSESSMENT

<u>soil</u> - slightly down<u>browse</u> - stableherbaceous understory - slightly down

1999 TREND ASSESSMENT

Trend for soil is slightly up. Erosion is minimal even with the excessive slope. The increase in percent litter cover coupled with the decrease in bare soil cover suggests an improving soil condition. Sum of nested frequency for perennial grasses and forbs increased as well, which indicates better distribution of protective ground cover to hold soils in place. Trend for the key browse, black sagebrush, is up slightly. Percent decadency decreased and recruitment is high. Use is light to moderate with good seed production. The herbaceous understory shows upward trends as the perennial species increased in sum of nested frequency and cover since the 1994 reading.

TREND ASSESSMENT

soil - slightly up

<u>browse</u> - slightly up for black sagebrush, although not critical for this site herbaceous understory - up

HERBACEOUS TRENDS --

Herd unit 16B, Study no: 16

T y	Species	Nested	Freque	ncy	Quadra	t Freque	ency	Ave:	-
p e		'88	'94	'99	'88	'94	'99	1 94	(199
G	Agropyron spicatum	151	175	178	63	66	74	5.31	7.04
G	Elymus salina	_a 198	_{ab} 243	_b 265	76	87	92	10.69	10.61
G	Poa fendleriana	_c 191	_a 70	ь118	83	32	51	.43	1.21
T	otal for Annual Grasses	0	0	0	0	0	0	0	0
T	otal for Perennial Grasses	540	488	561	222	185	217	16.45	18.86
T	otal for Grasses	540	488	561	222	185	217	16.45	18.86
F	Andropogon scoparius	-	1	1	-	1	-	.00	I
F	Arabis spp.	1	2	8	1	1	4	.00	.02
F	Astragalus tenellus	a ⁻	ь6	a ⁻	-	5	-	.06	-
F	Astragalus spp.	_c 128	_a 2	_b 71	56	2	32	.03	2.99
F	Castilleja linariaefolia	-	2	-	-	1	-	.00	-
F	Erigeron eatonii	1	-	-	1	-	-	-	-
F	Eriogonum elatum	-	2	-	-	1	-	.00	-
F	Lesquerella spp.	-	-	2	-	-	1	-	.00
F	Machaeranthera grindelioides	8	13	15	4	6	8	.11	.13

T y	Species	Nested	Freque	ncy	Quadra	t Freque	ency	Ave	
p e		'88	'94	'99	'88	'94	'99	1 94	1 99
F	Phlox longifolia	-	5	ı	-	2	-	.01	-
F	Schoencrambe linifolia	a ⁻	ь6	_{ab} 5	-	4	2	.04	.01
F	Senecio multilobatus	-	4	2	-	2	2	.01	.01
To	otal for Annual Forbs	0	0	0	0	0	0	0	0
Т	otal for Perennial Forbs	138	43	103	62	25	49	0.28	3.17
Т	otal for Forbs	138	43	103	62	25	49	0.28	3.17

Values with different subscript letters are significantly different at % = 0.10

BROWSE TRENDS --

Herd unit 16B, Study no: 16

T y p e	Species	Str Frequ 194	rip nency (99	Aver Cov 94	-
В	Artemisia frigida	16	22	.01	.07
В	Artemisia nova	87	92	6.14	7.14
В	Artemisia tridentata vaseyana	15	0	.18	-
В	Chrysothamnus depressus	0	2	.00	.03
В	Chrysothamnus viscidiflorus viscidiflorus	7	2	-	1
В	Eriogonum corymbosum	4	4	.00	.15
В	Gutierrezia sarothrae	15	20	.36	.20
В	Juniperus osteosperma	-	-	.63	.15
В	Pinus edulis	0	1	-	.15
В	Symphoricarpos oreophilus	0	0	-	-
To	otal for Browse	144	143	7.33	7.89

CANOPY COVER ---

Herd unit 16B, Study no: 16

Species	Percent Cover 199
Pinus edulis	1

BASIC COVER --

Herd unit 16B, Study no: 16

Cover Type	Nes Frequ		Ave	rage Cove	er %
	0 94	1 99	'88	'94	'99
Vegetation	314	326	14.75	28.01	34.47
Rock	357	313	16.75	26.09	24.68
Pavement	313	309	18.00	3.29	9.48
Litter	372	360	40.25	21.05	25.95
Cryptogams	104	203	2.50	1.75	3.34
Bare Ground	299	271	7.75	15.39	11.73

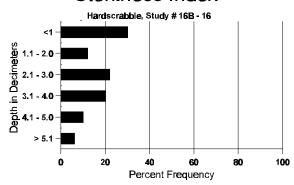
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SOIL ANALYSIS DATA --

Herd Unit 16B, Study # 16, Study Name: Hardscrabble

	r								
Effective rooting depth (inches)	Temp °F (depth)	рН	%sand	%silt	%clay	%0M	PPM P	РРМ К	dS/m
19.3	47.4 (17.7)	7.5	36.0	35.4	28.6	2.7	3.9	112.0	0.7

Stoniness Index



PELLET GROUP DATA --

Herd unit 16B, Study no: 16

Type	Qua Frequ 194	
Rabbit	14	1
Elk	49	55
Deer	7	4

Pellet Transect Days Use/Acre (ha)
n/a
41 (101)
2 (5)

BROWSE CHARACTERISTICS --

Herd unit 16B, Study no: 16

	1	nit 16B, \$																
A G		Form C	lass (N	lo. of P	lants)						Vigor Cl	ass			Plants Per Acre	Average (inches)		Total
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	94 99	- 4	-	-	-	-	-	-	-	-	-	-	-	-	0 80			0
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Y	88 94	1 1	-	-	-	-	-	-	-	-	1 1	-	-	-	66 20			1 1
	99	18	_	_	-	-	-	-	-	-	18	-	-	-	360			18
N	188	2	-	_	-	-	-	_	-	-	2	_	-	_	133	9	3	2
	94	20	-	-	-	-	-	-	-	-	20	-	-	-	400	7	8	20
	99	28	-	-	-	-	-	-	-	-	28	-	-	-	560	7	7	28
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		'94		00%			00%			00					-	+54%		
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	94	109					_	_	-	-	28	-	-	-	1866	8	14	20
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┡		s Showin	ng	Mod	lerate	Use	Hea	vy Us	e	Poor	Vigor					%Change		
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